

CLAIMS

[1] A film-covered battery comprising:

a battery element having a configuration in which a positive electrode confront a negative electrode; and

5 a laminate film, in which at least a heat-seal resin layer and a metal foil layer are laminated, for encapsulating said battery element with said heat-seal resin layer arranged on an inner side and for sealing said battery element by heat-sealing an outer periphery of said laminate film;

10 wherein a cross-linked structure is formed in said heat-seal resin layer of said laminate film in at least an area in which said heat-seal resin reaches a temperature equal to or greater than the melting point at the time of heat sealing said laminate film with the exception of an outer periphery of a heat-sealed area and in which said laminate film contacts a part that is sealed inside said laminate film.

[2] A film-covered battery according to claim 1, wherein said heat sealed area is formed in an area that includes an outer periphery of an area in which said cross-linked structure is formed.

[3] A film-covered battery according to claim 1, wherein:

lead terminals that extend outside said laminate film are connected to each of said positive electrode and negative electrode; and

5 the part that is sealed inside said laminate film includes said battery element and portions of said lead terminals.

[4] A film-covered battery according to claim 1, wherein said cross-linked

structure is formed by irradiating said laminate film by an electron beam.

[5] A film-covered battery according to claim 4, wherein said heat-seal resin layer includes a polyolefin.

[6] A film-covered battery according to claim 4, wherein said heat-seal resin layer is a material in which an electron beam-reactive compound is added to an electron beam-degradable resin.

[7] A film-covered battery according to claim 1, wherein said battery element is a chemical battery element or a capacitor element.

[8] A fabrication method of a film-covered battery in which a battery element having a configuration in which a positive electrode confront a negative electrode is encapsulated in a laminate film in which at least a heat-seal resin layer and a metal foil layer are laminated and sealed by heat-sealing a periphery of said laminate film, said fabrication method comprising the steps of:

forming a cross-linked structure in said heat-seal resin layer in at least a area of said laminate film in which said heat-seal resin layer reaches a temperature equal to or greater than the melting point at the time of heat-sealing said laminate film with the exception of an outer periphery of a heat-sealed area, and an area in which said laminate film contacts a part that is sealed;

encapsulating said battery element in said laminate film in which the cross-linked structure have been formed in said heat-seal resin layer with said heat-seal resin layer as an inner surface; and

heat-sealing the outer periphery of said laminate film that encapsulates

said battery element to seal said battery element.

[9] A fabrication method of a film-covered battery according to claim 8, wherein the step for heat sealing the outer periphery of said laminate film includes heat-sealing an area that includes an outer periphery of an area in which said cross-linked structure has been formed.

[10] A fabrication method of a film-covered battery according to claim 8, wherein said step of forming cross-linked structure includes the steps of:

masking an area of said laminate film in which the cross-linked structure is not formed; and

5 irradiating said laminate film that has been masked by an electron beam.

[11] A fabrication method of a film-covered battery according to claim 10, further including a step of forming in said laminate film a depression for accommodating said battery element before said step of forming the cross-linked structure.